

29 POLYPHENOL EXTRACTION FROM AERIAL PARTS OF *GALIUM VERUM* L. BY DIFFERENT TECHNIQUES

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Introduction. The genus *Galium* L. (fam. Rubiaceae) includes more than 600 species in the world flora, of which 45 species in the European flora and 28 species in the Romanian one. Among them, there are 20 species identified in the Republic of Moldova flora - *G. verum* is considered the most valuable in chemical compounds due to its content of iridoids, polyphenols, flavonoids, essential oils and tannins.

Aim of study. Investigation of extraction methods of polyphenol compounds from aerial parts of *G. verum* for optimization of polyphenol extraction techniques in research products.

Methods and materials. The herbal products *G. veri herba* were harvested from the spontaneous flora of the Republic of Moldova in the Bugeac steppe (2021), throughout the blooming period. The plant was identified by botanists from the Botanical Garden of the ASM and have been processed in agreement to recommendations for the purposes of chemical studies. Polyphenol compounds from *G. veri herba* were extracted with 60% ethanol solution for 30 min at 80°C, respecting the ratio of 1:10 (5 g of product in 50 ml of 60% ethanol solution) for all technical methods: water bath extraction, ultrasound assisted extraction and magnetic stirring extraction. Total phenolic contents (TPC) was determined by the Folin-Ciocalteu method with gallic acid as reference substance.

Results. Extraction of polyphenolic compounds from *G. veri herba* was carried out taking into account parameters influencing ultrasound-assisted extraction: sonication time, amplitude, solvent and particle size that depends on the destructive effects of ultrasonic waves. The extraction mechanism involves diffusion through cell walls and washing out the cell contents, in this order the cavitation effects of these waves facilitate the extractable compounds release. The high temperature increases solubility, diffusivity and pressure, which helps the waves penetrate the tissue and transport the contents in a variety of solvents. Extraction of polyphenolic compounds performed at different ultrasonic amplitudes from 50 to 100% shows a maximum TPC content (29.21 mg/g) at 80% amplitude, followed by the magnetic stirring method (28.17 mg/g) and water bath extraction (27.56 mg/g).

Conclusion. The diversity of phenolic compounds found in vegetal products makes it difficult to develop a universal extraction method. In the case of *G. veri herba* the optimal method of polyphenol extraction is ultrasound-assisted extraction.